



PATENT COOPERATION TREATY

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From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
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UNITED STATES OF AMERICA

RECEIVED

JUL 29 2002

(PCT Article 17(3)(a) and Rule 40.1)

BROMBERG & SUNSTEIN

Date of mailing
(day/month/year)

22/07/2002

Applicant's or agent's file reference

2204/C07 WO

PAYMENT DUE

within 45 ~~XXXX~~ days
from the above date of mailing

International application No.

PCT/US 02/03532

International filing date
(day/month/year)

08/02/2002

Applicant

NORTEL NETWORKS LIMITED

1. This International Searching Authority

- (i) considers that there are 0005 (number of) inventions claimed in the international application covered by the claims indicated ~~XXXX~~ on the extra sheet:

and it considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated ~~XXXX~~ on the extra sheet:

- (ii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:

1-13, 18

- (iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid

2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:

EUR 945,00 x 0004 = EUR 3.780,00
Fee per additional invention number of additional inventions total amount of additional fees

Or, _____ x _____ = _____

The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



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EINSCHREIBEN



INVITATION TO PAY ADDITIONAL FEES

International application No.

PCT/US 02/03532

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-13,18

1.1. Claims: 1-7,9-13,18

Optical gain element based on a series of three non-absorbing optical limiters, each of which is coupled with an additional input signal having specific intensity, and optical logic elements based on such an optical gain element.

1.2. Claim : 8

Optical logic AND gate comprising a non-absorbing optical limiter, wherein the two inputs of the AND gate are combined in a ratio 50:50 and the output of the AND gate is the signal transmitted through the optical limiter.

2. Claim : 14

Optical sampler

3. Claim : 15

Optical noise subtractor

4. Claim : 16

Optical automatic gain controller

5. Claim : 17

Optical switching device

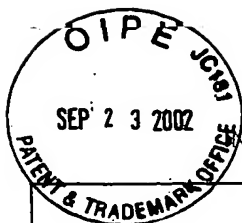
Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

Present international application lacks unity within the meaning of Rule 13 PCT for the following reasons:

Document D1=Brzozowski et al.: "All-optical analog-to digital converters, hard limiters, and logic gates", cited by the applicant, discloses a non-absorbing optical hard limiter (Figures 1 and 2) having all the features of claims 1-5, an optical logic device (Figure 7) having all the features of claim 6 and an optical analog-to-digital converter (Figure 6) having all the features of claim 18.

Beyond this prior art, the special technical features (in the meaning of Rule 13.2 PCT) of the application are:

Claims 7, 9-13: The arrangement of three known non-absorbing optical



INVITATION TO PAY ADDITIONAL FEES

limiters in series, each of which being coupled with an additional input signal of specific intensity, such that the arrangement functions as an optical gain element. It is assumed that the "optical NOT gate" of claims 12 and 13 is intended to refer to claim 11 and that the "optical gain element" of claims 9, 10 and 11 is intended to refer to claim 7.

Claim 8: The two inputs of the AND gate are combined in a ratio 50:50 before reaching the known non-absorbing optical limiter so that the output of the AND gate is the transmitted signal, whereas in D1 it is the reflected signal. Claim 8 is linked to claims 9-13 (but not to claim 7) by the common general inventive concept of logic elements based on known non-absorbing optical limiters, wherein the two inputs are combined in a 50:50 ratio.

Claim 14: An optical sampler based on known non-absorbing optical limiters.

Claim 15: An optical noise subtractor based on the combination of known non-absorbing optical limiters and known optical couplers.

Claim 16: An optical automatic gain controller based on known non-absorbing optical limiters.

Claim 17: An optical switching device based on known non-absorbing optical limiters for switching optical information from an optical input to one of a number of optical outputs based upon an address in the optical information.

Altogether five different subjects have been identified which do not have special technical features in common. The only concept linking all the claims is a non-absorbing optical limiter which is known in the prior art (e.g. from D1). Therefore, it is concluded that the application does not contain a single common inventive concept and does accordingly not fulfill the requirements of Rule 13.2 PCT. The present application lacks unity of invention and does not satisfy Rule 13.1 PCT.

SEP 23 2002

Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCH

International Application No

PCT/US 02/03532

The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:

1-13, 18

2. This communication is not the international search report which will be established according to Article 18 and Rule 43.

3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.

4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BRZOWSKI L AND SARGENT E: "All-optical analog-to digital converters, hardlimiters, and logic gates" JOURNAL OF LIGHTWAVE TECHNOLOGY, vol. 19, no. 1, January 2001 (2001-01), pages 114-119, XP002204371 cited in the application	1-6, 18
A	the whole document	8, 9
A	US 5 740 287 A (BLOEMER MARK J ET AL) 14 April 1998 (1998-04-14) abstract; figure 1 column 2, line 44 -column 3, line 56	1, 3
A	US 4 965 760 A (CUIKENDALL ROBERT R ET AL) 23 October 1990 (1990-10-23) column 1, line 56 -column 2, line 11; claims 11, 18, 23; figure 16	1, 3
A	US 5 737 102 A (ASHER SANFORD A) 7 April 1998 (1998-04-07) figures 1-3; examples 5, 6	7-13

☐

Further documents are listed in the continuation of box C.

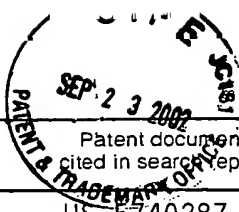
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Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family



Patent Family Annex

Information on patent family members

International Application No

PCT/US 02/03532

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5740287	A	14-04-1998	NONE	
US 4965760	A	23-10-1990	NONE	
US 5737102	A	07-04-1998	US 5452123 A	19-09-1995